

# Claims

[c1] What is claimed is:

1. A method for early warning management of at least one piece of semiconductor equipment, each piece of equipment processing a plurality of semiconductor products according to at least one corresponding process parameter, the method comprising:  
recording each process parameter for each piece of equipment;  
recording processing conditions of each piece of equipment as at least one corresponding equipment parameter when each piece of equipment is processing;  
evaluating and recording the quality of semiconductor products and corresponding testing parameters after each semiconductor product has been processed; and  
analyzing a relationship between the corresponding process parameter, the corresponding equipment parameters, and the semiconductor product quality for each piece of equipment.

[c2] 2. The method of claim 1, wherein the step of analyzing further comprises:  
analyzing equipment difference of two pieces of equip-

ment in the same process according to the semiconductor product quality of at least two pieces of equipment.

- [c3] 3. The method of claim 1, wherein the step of analyzing compares the relationship between the corresponding process parameter, the corresponding equipment parameters, and the semiconductor product quality of each piece of equipment using discriminate analysis.
- [c4] 4. The method of claim 1, wherein the step of analyzing uses a two sample t-test.
- [c5] 5. The method of claim 1, wherein the step of analyzing further comprises:  
using a T-test, a one-way analysis of variance (ANOVA), a two-way analysis of variance, or box plots to analyze.
- [c6] 6. The method of claim 1, further comprising:  
recording the corresponding process parameter, the corresponding equipment parameters, and the analytic results in a database.
- [c7] 7. The method of claim 1, further comprising:  
feedback monitoring to transmit the analytic results to a user through a network or a man-machine interface.
- [c8] 8. A system for early warning management of at least one piece of semiconductor equipment, each piece of

equipment processing a plurality of semiconductor products according to at least one corresponding process parameter, the system comprising:

- a process interface module for recording each process parameter of each piece of equipment;
- an equipment interface module for recoding processing conditions of each piece of equipment as at least one corresponding equipment parameter when each piece of equipment is processing;
- a quality monitor interface module for evaluating and encoding the quality of semiconductor products and corresponding testing parameters after each semiconductor product has been processed; and
- an analysis core module for analyzing a relationship between the corresponding process parameter, the corresponding equipment parameters, and the semiconductor product quality of each piece of equipment.

[c9] 9. The system of claim 8, wherein the analysis core module analyzes equipment difference of two pieces of equipment in the same process according to the semiconductor product quality of at least two pieces of equipment.

[c10] 10. The system of claim 8, wherein the analysis core module compares the relationship between the corresponding process parameter, the corresponding equip-

ment parameters, and the semiconductor product quality of each piece of equipment using discriminate analysis.

- [c11] 11. The system of claim 8, wherein the analysis core module uses a two sample t-test.
- [c12] 12. The system of claim 8, wherein the analysis core module analyzes using a T-test, a one-way analysis of variance, a two-way analysis of variance, or box plots.
- [c13] 13. The system of claim 8, further comprising:  
a database for recording the corresponding process parameter, the corresponding equipment parameters, and the analytic results of the analysis core module.
- [c14] 14. The system of claim 8, further comprising:  
a monitor feedback interface for transmitting the analytic results of the analysis core module to a user through a network or a man-machine interface.